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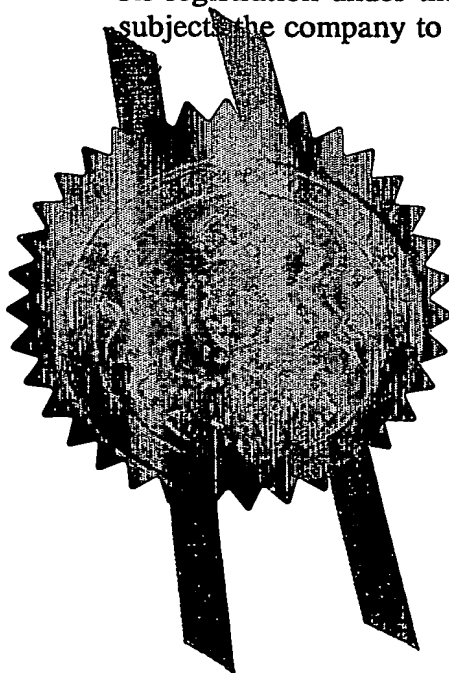
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- 1 JUL 2003

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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
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1.	Your reference	P017642GB	
2.	Patent application number *(The Patent Office will fill in this part)*	**0315367.3**	**- 1 JUL 2003**
3.	Full name, address and postcode of the or of each applicant *(underline all surnames)*	INTELLPROP LIMITED PO BOX 626 NATIONAL WESTMINSTER HOUSE LE TRUCHOT ST PETER PORT GUERNSEY 79.0053300l	
	Patents ADP number *(if you know it)*		
	If the applicant is a corporate body, give the country/state of its incorporation	A GUERNSEY COMPANY	
4.	Title of the invention	TELECOMMUNICATIONS SERVICES APPARATUS	
5.	Name of your agent *(if you have one)*	D Young & Co	
	"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*	21 New Fetter Lane London EC4A 1DA	
	Patents ADP number *(if you know it)*	59006	

6.	If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number	Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*
7.	If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application		Date of filing *(day / month / year)*

8.	Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if* a) *any applicant named in part 3 is not an inventor, or* b) *there is an inventor who is not named as an applicant, or* c) *any named applicant is a corporate body.* *See note (d))*	Yes

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                    Continuation sheets of this form   NONE

                                      Description   7

                                        Claim(s)   0   Cf

                                        Abstract   0

                                      Drawing(s)   1   only

10. If you are also filing any of the following,
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                              Priority documents   0

                    Translations of priority documents   0

          Statement of inventorship and right   2
          to grant of a patent *(Patents Form 7/77)*

          Request for preliminary examination   0
                  and search *(Patents Form 9/77)*

          Request for substantive examination   0
                  (Patents Form 10/77)

                    Any other documents   0
                        (please specify)

11.   I/We request the grant of a patent on the basis of this application.

                                       Signature D. Young & Co   Date 01 July 2003
                                       D Young & Co (Agents for the Applicants)

12. Name and daytime telephone number of
    person to contact in the United Kingdom   A J M Pilch   023 8071 9500

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1.

TELECOMMUNICATIONS SERVICES APPARATUS

This invention concerns the field of telecommunications, and in particular techniques for text and voice messaging.

5   Today, both voice and text messaging are commonly used by subscribers of mobile telephone networks. Interconnection between many networks has permitted message transmission between subscribers of different networks, and in some cases also between networks of differing technologies, such as GSM and CDMA. Voice messaging commonly uses a mailbox system, whereby a subscriber is allocated a
10   personal mailbox into which other subscribers may record voice messages for later collection by the mailbox owner. Text messaging commonly uses a standardised interface on the subscriber's handset for message composition, and a store and forward-based transport system for delivery of the message to a recipient when available. For example, in the GSM mobile telephone system, the Short Message
15   Services (SMS) provide this functionality.

Text message transmission is possible between mobile handsets, including handsets on other networks, between mobile and suitably adapted fixed networks, and between mobiles and Hosts or Applications in the subscriber's network.
20

Transmission of mobile originated messages to Hosts or Applications in a network other than the subscriber's own network is also possible. This is commonly achieved using a technique known as virtual mobile, whereby the receiving Host or Application is permanently allocated a range of 'virtual' mobile numbers that are taken from the
25   hosting network's allocated number range. Calls or text messages may then be routed from anywhere to the correct network using standard routing methods. The receiving network then recognises the destination number as being one of its virtual numbers, and is then able to route the communication to the associated Host or Application.

30   Interconnection with the Internet has also been implemented so that text messages may be composed on a web page of a service provider, and then the text message may be

2

sent over a link to a mobile telephone network and subsequently delivered to its destination in the same way as a mobile originated text message. Several of the large Internet content portal companies provide such a service and in many cases, up to a limit, sending text messages to mobiles from such a 'web mail' application on the

5   Internet can be free of charge.

It is also possible for the recipient of a text message sent from such a web mail system to reply to the message, even though he has no knowledge of the website, the service provider or the identity of the sender. One way that this has been achieved is to use the

10   virtual mobile technique.

Although the prior art provides for text messages and replies to be sent between a web mail account and a mobile telephone, there is no provision for voice communication between these entities. Normally when a mobile user receives a mobile originated text

15   message, he has a number of options for reply. He can send a reply text, he can save the originating number for later use, or he can use the originating number to make a voice call and hence either talk to the sender, or leave a message in voice mail.

From the point of view of the mobile user who has just received a text message that

20   happens to be from a web mail sender, he would expect to have the same options. However, were he to try to make a voice call to the sender's number, which is a virtual mobile number, he would find that the call would not be connected, or would result in announcement indicating that the number cannot be used for voice calls.

25   This non-orthogonality of function is confusing for users, and limits the connectivity and hence the traffic growth potential of the network.

According to the invention there is provided a Telecommunications Services Apparatus operable to provide means to route a voice call via a recording apparatus,

30   and to record a voice message in reply to a text message sent from an external network such as a data network. There is further provided a means to deliver this recorded

3

message as an email attachment over the data network to an email account associated with the sender of the original text message.

According to the invention, the recording apparatus preferably compresses the
5   recorded audio, for example using GSM coding or another coding scheme that is commonly supported by personal and business computer operating systems, such that the physical size of the recorded file is minimised, making it suitable for transmission by email as an attachment, and readily reproducible as audio on the receiving computer terminal.
10

In a further aspect of the invention there is provided a Telecommunications Services Apparatus operable to provide means to make a voice call in reply to a text message sent from an external network such as a data network. In an aspect of the invention, the voice call is directed via conversion apparatus allowing the call to be completed over a
15   data network, such as via Voice over IP.

Referring to Figure 1, a user at a data terminal (1) such a personal computer may communicate via the Internet (2) with a web site operating a Web mail facility. The web mail facility is referred to as the web mail subsystem (3). A data store (4) is
20   provided to allow the web mail subsystem to store associations between an email address of the user, an allocated virtual mobile telephone number and the telephone number of the desired recipient. The web mail system is associated with a mobile telephone network (5) allowing a message composed on the web mail subsystem to be sent as a text message to a mobile telephone (6). The connection between the web mail
25   subsystem and the mobile network may be via an SMSC (8) in the mobile network or via another route. A text message sent to the SMSC is routed via one or more MSCs (7) and to the mobile recipient (6). A textual reply from the mobile (6) is routed via the MSC (7) and the Virtual Mobile facility (9) in the network, which delivers the reply back to the web mail subsystem (3). Using data stored in the data store (4), the
30   message is delivered to the email address associated with the original user. A voice reply from the mobile (6) is routed via the Voice services equipment (10), and may

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either be converted to a recording and delivered by email attachment to the user or connected over the data network to set up a voice call to the user terminal (I).

5   The prior art web mail facility for allowing replies from a mobile back to the originating web-based email account is first described.

The Internet Service Provider (ISP) who provides the service for originating text messages from the web already has an association with at least one mobile telephone network in order for the messages to be delivered. By extending this arrangement to
10   include a range of virtual mobile numbers, a reply path can be effected. When the ISP sends a first text message to a given recipient from the web to the mobile network, it allocates for example, the first virtual mobile number in the range to be the source address. If a subsequent text messages from a different sender is sent to the same recipient, then a next virtual mobile number may be used as the source address in order
15   to distinguish the two communications. Messages from the same sender do not need to be distinguished. The web mail system keeps a record of the originator's email address, the virtual mobile number used, and the destination mobile number used in a data store.

20   The text message arrives at the mobile handset of the recipient with a source address (CLI) set to the allocated virtual mobile number. By replying to the message, the handset transposes the source address and destination address, and delivers the reply message to the virtual mobile number. The virtual mobile number allows the reply path to work successfully from any network.
25

The mobile network determines from the virtual mobile number that the message is destined for the web mail application and directs the message to the web mail subsystem. From the virtual mobile number and the sender's CLI in the data store, the web mail subsystem is able to determine the email address of the original message, and
30   can post the reply to this email address, thereby completing the reply path.

5

The prior art system so far described has no support for voice reply from the mobile, even though the mobile user may reasonably expect to be able to utilise the originating mobile number to make a voice call. Any attempt to do this in the prior art system will result in a failed voice call.

5

In a first aspect of the invention, the mobile user is able to make a voice call in reply to a text message received from the web mail user, using the virtual mobile number that is the source of the text message as the destination number for the voice call. The call is routed using the virtual mobile number to the correct mobile network. The voice call

10   is then directed to a Voice Services Equipment (VSE), which prompts the caller to record a message. The recording is preferably encoded in a compressed audio format such as GSM 6.1 for which de-compressors are commonly provided in popular computer operating systems. The VSE then transmits the recorded to file to an email gateway that is part of the web mail subsystem, so that file can be delivered to the user

15   as an email attachment. The web mail subsystem then delivers it to the email account of the data network user.

This method is a very simple and easy to use extension to the prior art that requires no additional effort on the part of the data network user. It therefore satisfies the threshold

20   law for usage of a new service, in that the effort barrier to use is zero. No additional software is required on the data network user's terminal. The method also has the advantage that the voice file is available to be listened to again, kept, archived etc. using the management tools available on the user's terminal.

25   In a second aspect of the invention, the mobile user is able to reply to the web mail message by making a voice call to the originating number, which is a virtual mobile number, in the normal way. If the original web mail sender is on-line (still connected to the internet), has suitable audio peripherals connected to his computer to permit voice communication and has suitable client software provided by the ISP downloaded

30   onto his computer, then the voice call may be connected through via the Internet. The voice data may be carried over the Internet using a Voice over IP (VoIP) protocol, and

- 6 -

may use either a standard or a proprietary client application on the computer to handle the call.

It is envisaged that when then the user first registers with the ISP, or subsequently, the
5   user is offered the facility to receive voice calls on his computer provided that the
hardware is sufficiently capable. If the user agrees, then some client software is
downloaded onto the computer. While the user is online to the Internet, the client
software may periodically communicate with the web mail subsystem of the ISP to
indicate that the user is online and able to receive voice calls at a particular Internet
10 address.

The voice call is initiated by the mobile user that has just received a text message from
the computer user. The call is routed using the virtual mobile number to the correct
mobile network, and then on to the VSE. By querying the web mail subsystem, the
15 VSE establishes whether the user is online, and if so routes the call to the enhanced
web mail subsystem, which provides the standard function of a PSTN to IP media
gateway. Using standardised techniques, the call is set up over PSTN and VoIP
between the mobile telephone and the client software on the user's computer terminal.

20 If the call set-up fails, either because the user has recently gone off-line, the user
rejects the call, or for any other reason, then the Voice Services Equipment reroutes
the call to a internal recording service, giving suitable announcements to the mobile
caller and delivering the recording by email in the manner described before.

25 It can be seen that the direct voice communication method has a higher threshold of
use, since it requires software to be downloaded and run on the user's terminal. It is
therefore considered to be an optional enhancement, while the primary and default
method of operation of the invention would be the sending of a recording as an email
attachment.

30

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As an enhancement to the system, the user of the data network may be permitted to initiate a voice call to a mobile telephone user. In this case the system would allocate a virtual mobile number and present this is as the CLI of the caller.

5   As a further enhancement to the system, audio smileys may be introduced into the message path in either direction. In the web to mobile direction, the text message could be directed via a smiley server, which would convert the text to speech, inserting and audio smileys specified in the message composition. In the reply direction, audio smileys could be inserted by the VSE during the voice call or voice recording, in

10   response to DTMF keys pressed by the mobile user.

In so far as the embodiment(s) of the invention described above may be implemented, at least in part, using software controlled processing apparatus, it will be appreciated that a computer program providing such software control and a storage medium by

15   which such a computer program is stored are envisaged as aspects of the invention.
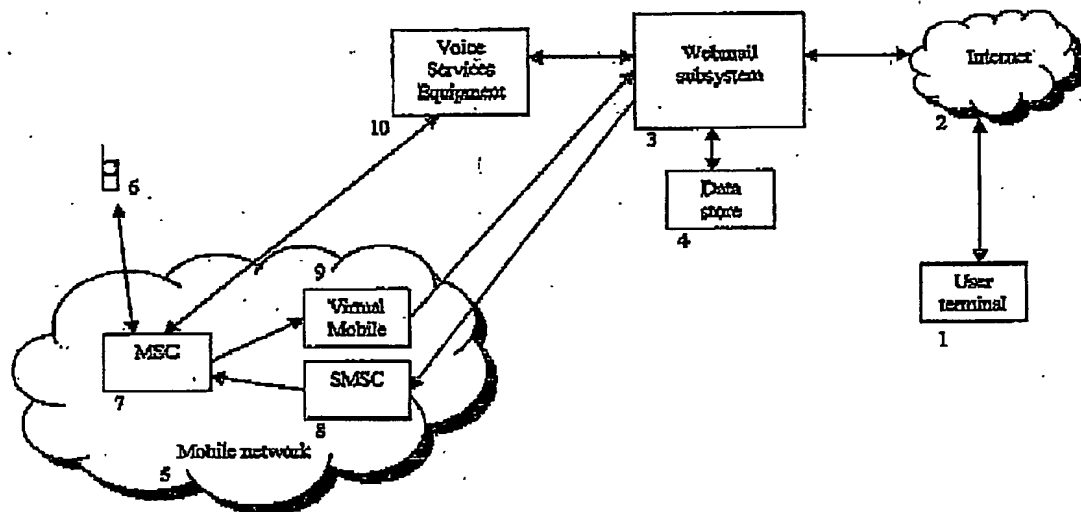
1/1

Figure 1